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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/746,489	12/22/2000	Torsten Teich	DE919990076	8948

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EXAMINER	
KHOSHNOODI, NADIA	
ART UNIT	PAPER NUMBER
2137	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/21/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	09/746,489	TEICH ET AL.	
	Examiner	Art Unit	
	Nadia Khoshnoodi	2137	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10/17/2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 October 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Response to Amendment

Applicant's arguments/amendments with respect to amended claims 1, 3, 8-9, & 20 and previously presented claims 4-7 & 10-19 filed 10/17/2006 have been fully considered and therefore the claims are rejected under new grounds. The Examiner would like to point out that this action is made final (See MPEP 706.07a).

Furthermore, previous drawing objection, 35 USC 101 rejections, and 35 USC 112, second paragraph rejections are withdrawn due to the amendments filed 10/17/2006.

Claim Objections

Claims 1, 8-10, 12, and 20 are objected to because of the following informalities:

As per claim 1:

In line 3 of claim 1, Applicants recite, "...in order to restore data..." where the phrase "in order to" is not necessary. Appropriate correction is required.

As per claims 8 and 20:

Claims 8 and 20 are objected to because of the following informalities: when using acronyms, they should first be spelled out at least once before referring to them in the condensed form. For example, the EEPROM should be spelled out at least once in order to indicate the meaning of what EEPROM stand for. Appropriate correction is required.

As per claim 9:

Applicants recite, in line 2 of the claim, "new or modified data..." where in the previous limitations in the independent claim from which this claim derives, Applicants only recite terminology consistent with modifying the data, i.e. "modified data" and thus there is no support

for "new data. These phrases as recited in various limitations are inconsistent with each other, thus Applicants are required to either state "new or modified" in all instances where the term "modifying"/"modified" occurs (including in claims that depend on claim 9) or to simply remove "new or" in order to maintain consistency in the claim as well as proper antecedent basis for all of the elements in the claim.

As per claim 10:

Applicants recite, in line 5 of the claim, "adding to or modifying said data..." where in previous limitations, Applicants recite, "modifying the data"/"modified data" and in a different instance "new or modified data." These phrases as recited in various limitations are inconsistent with each other, thus Applicants are required to either state "adding to or modifying" in all instances where the term "modifying"/"modified" occurs (including in claims that depend on claim 10) or to simply remove "adding to or" in order to maintain consistency in the claim as well as proper antecedent basis for all of the elements in the claim.

As per claim 12:

Applicants recite, in the first limitation of the claim, "adding to or modifying the data..." where in the third limitations, Applicants recite, "modifying the data..." These are inconsistent with each other and in the instance that "adding" is chosen in the first limitation, the third limitation has no support for "adding." Therefore, Applicants are required to either state "adding to or modifying" in all instances where the term "modifying" occurs (including in claims that depend on claim 12) or to simply remove "adding to or" in order to maintain consistency in the claim as well as proper antecedent basis for all of the elements in the claim.

Furthermore, various references are made to a record that is 'fully active,' however in one instance in the claim instead of 'fully active' Applicants have written it as "fully active" (with double quotations instead of single quotations). Applicants are required to choose one form or the other to maintain consistencies throughout all of the claims including its dependent claims (for example in line 4 of claim 17, Applicants have omitted the quotations altogether).

Claim Rejections - 35 USC § 103

V. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

VI. Claims 1 and 3-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Whitaker et al., US Patent. No. 6,298,425, and further in view of Harris et al., US Patent No. 5,873,097.

As per claim 1:

Whitaker et al. substantially teach a method comprising: securely managing a number of data files in non-volatile storage in order to restore data after abortion of a write operation (col. 6, lines 20-27), the data being stored in a record oriented data structure with each of the records containing data contents (col. 11, lines 18-20), the securely managing comprising: performing a write operation comprising an update stage and an atomic write stage (col. 9, lines 47-59), the performing comprising multiple update operations for a plurality of records (col. 9, lines 47-59), wherein each file affected by the write operation comprises a plurality of records, and for each

record thereof affected by the write operation, one of said records in each file contains existing data prior to said multiple update operations and another of said records contains corresponding data as modified according to said multiple update operations (col. 10, lines 59-65 and col. 11, lines 5-32), each of said records also comprising a record-status data element indicative of the status of the data contained therein (col. 11, lines 18-22); and accepting the multiple updates to the plurality of records in one atomic write stage after completion of the multiple update operations (col. 9, lines 47-59 and col. 10, lines 50-58), the one atomic write stage employing the record-status data elements of the plurality of records (col. 11, lines 18-22), and wherein at all times during the write operation, for each record of a file affected by the write operation, the file contains existing data stored prior to the write operation in one record and corresponding data as modified by the write operation in another record (col. 12, lines 14-29).

Not explicitly disclosed is wherein each record contains, in addition to the data contents, a first reference indicating the current data-containing record of a previous file; a second reference indicating the current data-containing record of a subsequent file and the update stage comprising employing the second references of the plurality of records; and the one atomic write stage employing the first references. However, Harris et al. teach that the use of doubly-linked lists in order to maintain the records in a data structure (col. 84, lines 58-60), as well as that the first and second references of the objects must be employed when new objects are added (including adding modifications of records) or existing objects are deleted (col. 86, lines 12-50). Therefore, it would have been obvious to a person in the art at the time the invention was made to modify the method disclosed in Whitaker et al. to use a doubly-linked list instead of an array for various advantages (for example, as known in the art, linked lists in general have the

advantage that records/elements may be inserted indefinitely as opposed to dealing with continuously re-sizing arrays) and to employ the first and second references when adding/updating/deleting objects within the data structure in order to ensure accuracy of the records in the data structure. This modification would have been obvious because a person having ordinary skill in the art, at the time the invention was made, would have been motivated to do so since Harris et al. suggest that doubly-linked lists allow for easy removal/relocation of entries, as well as the fact that the second references of the objects added must be employed in order to maintain a sorted list in col. 33, lines 52-57.

As per claim 3:

Whitaker et al. and Harris et al. substantially teach the method as claimed in claim 1. Furthermore, Whitaker et al. teach wherein said data prior to the write operation, in each file, is retained as the active data in the case of a power failure, until all files have been successfully updated according to said write operation (col. 12, lines 14-29).

As per claim 4:

Whitaker et al. and Harris et al. substantially teach the method as claimed in claim 1. Furthermore, Whitaker et al. teach wherein each record contains a synchronization byte, indicating a relationship with records of other files (col. 6, lines 47-56).

As per claim 5:

Whitaker et al. and Harris et al. substantially teach the method as claimed in claim 3. Furthermore, Whitaker et al. teach wherein each record contains a synchronization byte, indicating a relationship with records of other files (col. 6, lines 47-56).

As per claim 6:

Whitaker et al. and Harris et al. substantially teach the method as claimed in claim 5. Furthermore, Harris et al. teach each record comprising a first pointer indicating the current data-containing record of a previous file and a further pointer (PTR 3) indicating the current data-containing record of a subsequent file (col. 86, lines 12-15).

As per claim 7:

Whitaker et al. and Harris et al. substantially teach the method as claimed in claim 6. Furthermore, Harris et al. teach the method comprising a second pointer (PTR 2) indicating the current data-containing record of that file (col. 34, lines 32-64).

VII. Claims 8-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Whitaker et al., US Patent. No. 6,298,425, and further in view of Harris et al., US Patent No. 5,873,097 and Chan et al., US Patent No. 5,331,189.

As per claims 8 and 20:

Whitaker et al. substantially teach a method comprising: securely managing a number of data files in non-volatile storage to restore data after abortion of a write operation (col. 6, lines 20-27), the data being stored in files in the record-oriented data structure, such that the data in all files affected by the write operation is consistent with respect to completion of the write operation (col. 12, lines 14-16), and wherein information concerning the status and location of the consistent data is stored in the record oriented data structure together with the data (col. 6, lines 47-56), wherein each record of the record oriented data structure of the files comprises data contents (col. 11, lines 18-20), the securely managing comprising: performing a write operation comprising an update stage and an atomic write stage (col. 9, lines 47-59), the performing comprising multiple update operations for a plurality of records (col. 9, lines 47-59), wherein

each file affected by the write operation comprises a plurality of records, and for each record thereof affected by the write operation, one of said records in each file contains existing data prior to said multiple update operations and another of said records contains corresponding data as modified according to said multiple update operations (col. 10, lines 59-65 and col. 11, lines 5-32), each of said records also comprising a record-status data element indicative of the status of the data contained therein (col. 11, lines 18-22); and accepting the multiple updates to the plurality of records in one atomic write stage after completion of the multiple update operations (col. 9, lines 47-59 and col. 10, lines 50-58), the one atomic write stage employing the record-status data elements of the plurality of records (col. 11, lines 18-22).

Not explicitly disclosed is wherein the non-volatile storage is an EEPROM. However, Chan et al. teach an EEPROM which allows for an easily scalable structure (col. 4, lines 5-10). Therefore, it would have been obvious to a person in the art at the time the invention was made to modify the method disclosed in Whitaker et al. to use this specific EEPROM in order to allow the data structure to have an easily scalable structure when records are added/deleted. This modification would have been obvious because a person having ordinary skill in the art, at the time the invention was made, would have been motivated to do so since Chan et al. suggest that using this specific EEPROM has the advantages of being highly resistant to disturbance as well as easily scalable to add/deleted records in col. 4, lines 5-10.

Also not explicitly disclosed is wherein each record contains, in addition to the data contents, a first reference indicating the current data-containing record of a previous file; a second reference indicating the current data-containing record of a subsequent file and the update stage comprising employing the second references of the plurality of records; and the one atomic

write stage employing the first references. However, Harris et al. teach that the use of doubly-linked lists in order to maintain the records in a data structure (col. 84, lines 58-60), as well as that the first and second references of the objects must be employed when new objects are added (including adding modifications of records) or existing objects are deleted (col. 86, lines 12-50). Therefore, it would have been obvious to a person in the art at the time the invention was made to modify the method disclosed in Whitaker et al. to use a doubly-linked list instead of an array for various advantages (for example, as known in the art, linked lists in general have the advantage that records/elements may be inserted indefinitely as opposed to dealing with continuously re-sizing arrays) and to employ the first and second references when adding/updating/deleting objects within the data structure in order to ensure accuracy of the records in the data structure. This modification would have been obvious because a person having ordinary skill in the art, at the time the invention was made, would have been motivated to do so since Harris et al. suggest that doubly-linked lists allow for easy removal/relocation of entries, as well as the fact that the second references of the objects added must be employed in order to maintain a sorted list in col. 33, lines 52-57.

As per claim 9:

Whitaker et al., Chan et al., and Harris et al. substantially teach the method according to claim 8. Furthermore, Harris et al. teach wherein two or more data files are affected by said write operation, and wherein new or modified data is written into said files in a cyclic manner, wherein each file comprises an indication of the number of records contained in said file and a plurality of records (col. 34, lines 41-44), and wherein each record further comprises a synchronization number synchronizing with records of other files, and said data (col. 34, lines

33-44).

As per claim 10:

Whitaker et al., Chan et al., and Harris et al. substantially teach the method according to claim 9. Furthermore, Harris et al. teach the method comprising determining a current active record of a first of said files, and a working record of said first file (col. 85, lines 1-36); setting the synchronization number of the working record of said file to the synchronization number of the current active record (col. 34, lines 33-44); copying the data stored in said current active record into said working record and adding to or modifying said data according to said write operation, in said working record; changing the status of said working record of said file to `active` (col. 6, lines 59-63 and col. 85, lines 1-36); repeating said steps for each further file; and changing the record status of said original current active record of said first file to `inactive` as an indication that said write operation is complete (col. 5, lines 10-28).

As per claim 11:

Whitaker et al., Chan et al., and Harris et al. substantially teach the method as claimed in claim 10. Furthermore, Harris et al. teach wherein said step of determining the current active record and the working record of said files comprises searching for the first record in said file whose status byte indicates `active` status and setting this record as said current active record, and setting the subsequent record as said working record (col. 7, lines 5-32).

As per claim 12:

Whitaker et al., Chan et al., and Harris et al. substantially teach the method as claimed in claim 11. Furthermore, Harris et al. teach the method comprising: adding to or modifying the data of a record in the first file by: identifying the current active record of said file and a working

record and copying the data to be added to or modified from the current active record to the working record (col. 7, lines 5-18); modifying the data in said working record in accordance with the write operation (col. 7, lines 5-8); wherein the status byte of said current active record indicates that that record is `fully active` and the status of said working record indicates that that record is `inactive` (col. 7, line 61 – col. 8, line 19); setting synchronization indicator pointers to indicate that said file is said first file and to indicate that no further files have been modified (col. 8 lines 20-38); identifying a current active record and a working record of a second file and copying the data from the current active record to the working record (col.6, lines 59-63); modifying the data in the working record according to said write operation, wherein the status byte of said active current record indicates that the data in this record is "fully active" and the status byte of the working record indicates that this record is `inactive` (col. 7, line 61 – col. 8, line 19); setting synchronization indicator pointers to indicate the link between this file and said first file, and changing said synchronization indicator pointer of said first file to indicate its link with said second file (col. 8 lines 20-38); and repeating these steps for said second file for any subsequent files, wherein for the last file affected by said write operation, after setting said synchronization indicator pointers, determining that this is the last file, setting an indication pointer to indicate that no subsequent files are affected by said writing operation (col. 8 lines 20-38); and setting the status byte of each of said working records of said affected files to a `fully active` state, whereupon the write operation is complete and the modified data is the active data in all files (col.6, lines 59-63).

As per claim 13:

Whitaker et al., Chan et al., and Harris et al. substantially teach the method as claimed in claim 12. Furthermore, Harris et al. teach the method wherein, upon interruption of said write operation at any stage, either all current active records of all files affected by said operation are set as `fully active` records, and the data contained in said files prior to the start of said write operation is the current active data, or all working records of all files are set to a `fully active` status, in which case all files contain the modified data due to said write operation as said active data (col. 6 lines 59-63).

As per claim 14:

Whitaker et al., Chan et al., and Harris et al. substantially teach the method as claimed in claim 13. Furthermore, Harris et al. teach the method wherein interruption of said write operation during or immediately after the step of modifying the data in the working record of said first file results in the current active record of said first file remaining as the `fully active` data record, at which time no further files have been modified and all of the `active` datable files correspond to the data prior to the write operation (col. 7, lines 2-17).

As per claim 15:

Whitaker et al., Chan et al., and Harris et al. substantially teach the method as claimed in claim 13. Furthermore, Harris et al. teach the method wherein an interruption of said write operation during or subsequent to the setting of the synchronization indicator pointers in said first file results in the current active record of said first file remaining as the `fully active` data record, at which time no further files have been modified and all of the `active` datable files correspond to the data prior to the write operation (col. 85, lines 1-36).

As per claim 16:

Whitaker et al., Chan et al., and Harris et al. substantially teach the method as claimed in claim 13. Furthermore, Harris et al. teach wherein an interruption of said write operation during or immediately after the step of modifying the data in the second or subsequent files results in the current active record of said second or subsequent file remaining set as said `fully active` record, and, since said synchronization indicator pointer of said first file still indicates that said current active record is still said `fully active` record of said first file, the currently active data of both or all of said files remains as that prior to the start of the write operation (col. 85, lines 1-36).

As per claim 17:

Whitaker et al., Chan et al., and Harris et al. substantially teach the method as claimed in claim 13. Furthermore, Harris et al. teach wherein an interruption to said write process during or immediately after modifying the data in the working record of the last file affected by said write operation, results in all of the current active records of all of said files being retained as said fully active records, wherein the currently active data corresponds to the data prior to the write operation (col. 85, lines 1-36).

As per claim 18:

Whitaker et al., Chan et al., and Harris et al. substantially teach the method as claimed in claim 13. Furthermore, Harris et al. teach wherein an interruption of said write process during or immediately after modification of the data in the working record of the last file affected by said write operation, causes all working records of all of said files to become set to `fully active` records, such that all files contain data modified as a result of said write operation as the

currently active data (col. 85, lines 1-36).

As per claim 19:

Whitaker et al., Chan et al., and Harris et al. substantially teach the method as claimed in claim 12. Furthermore, Harris et al. teach wherein, when all of said write steps have been successfully completed, without an interruption, said synchronization indicator pointers are used to indicate the links between the modified records of the files affected, and all working records are set to status `fully active` and said current active records are set to status `inactive` (col. 85, lines 1-36).

**References Cited, Not Used*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

1. US Patent No. 5,369,757
2. US Patent No. 5,469,562
3. US Patent No. 4,949,251
4. EP Pub. No. 0 454 340 A2

The above references have been cited because they are relevant due to the manner in which the invention has been claimed.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nadia Khoshnoodi whose telephone number is (571) 272-3825. The examiner can normally be reached on M-F: 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Emmanuel Moise can be reached on (571) 272-3865. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Nadia Khoshnoodi
Examiner
Art Unit 2137
12/13/2006

NK

EMMANUEL L. MOISE
SUPERVISORY PATENT EXAMINER